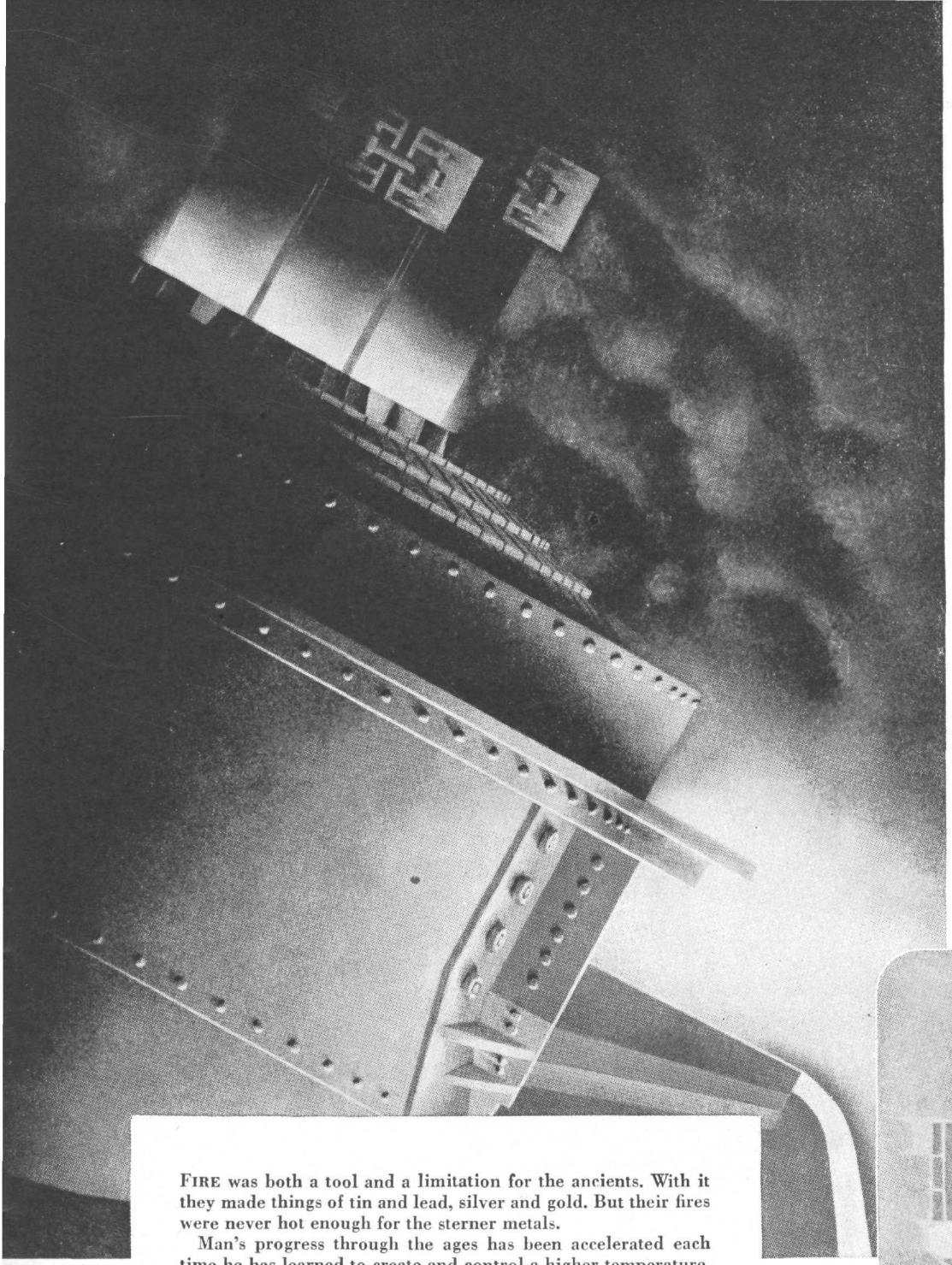


When is FIRE *too* COLD?

FIRE was both a tool and a limitation for the ancients. With it they made things of tin and lead, silver and gold. But their fires were never hot enough for the sterner metals.

Man's progress through the ages has been accelerated each time he has learned to create and control a higher temperature.

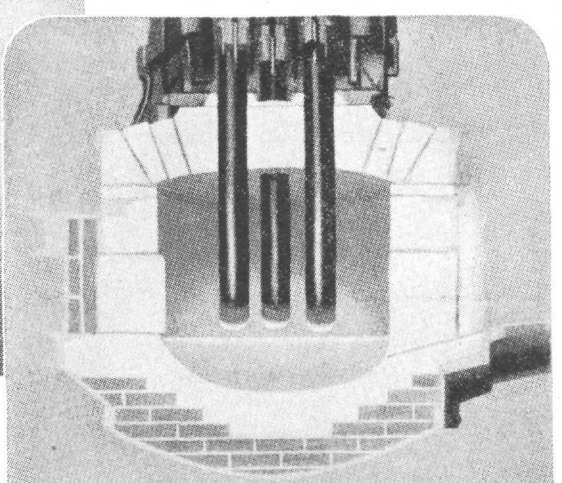
With the electric arc came heat hotter than any fire. And, by means of carbon or graphite electrodes—developed by research of NATIONAL CARBON COMPANY, INC., a Unit of UCC—man put the electric arc to work in furnaces such as the one you see above.

Born in the terrific heat of the electric furnace are many of the alloy steels used in ships, trains, planes and other equipment, and also the ferro-alloys that give strength, toughness, hardness —or the quality of being stainless—to these steels. These materials—and the intense heat that produces them—are vitally necessary to American industrial progress.

▼

Coming from the electric furnace—in addition to alloy steels and ferro-alloys—are phosphorus, abrasives, calcium carbide for acetylene used for welding and cutting, and many special alloys.

For further information write for booklet P-2, "The Story of the Carbon Arc" . . . there is no obligation.



Cross Section of an Electric Furnace

Electricity comes *to* the furnace on metal bars. It is carried *into* the furnace by carbon (or graphite) electrodes, which you see projecting down into a brick lined bowl. Carbon is used because, unlike metal, it will not melt.

You see carbon in many forms other than electrodes. Diamonds are pure carbon. Graphite, which is the "lead" in pencils, is carbon —and so are coke and charcoal. This material is the subject of unending research by the National Carbon Unit of UCC.

BUY UNITED STATES WAR BONDS AND STAMPS

UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street UCC **New York 17, N. Y.**

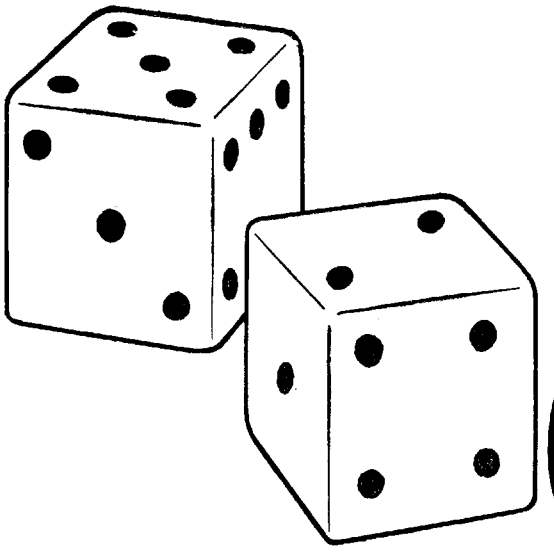
Principal Units in the United States and their Products

ALLOYS AND METALS — Electro Metallurgical Company, Haynes Stellite Company, United States Vanadium Corporation

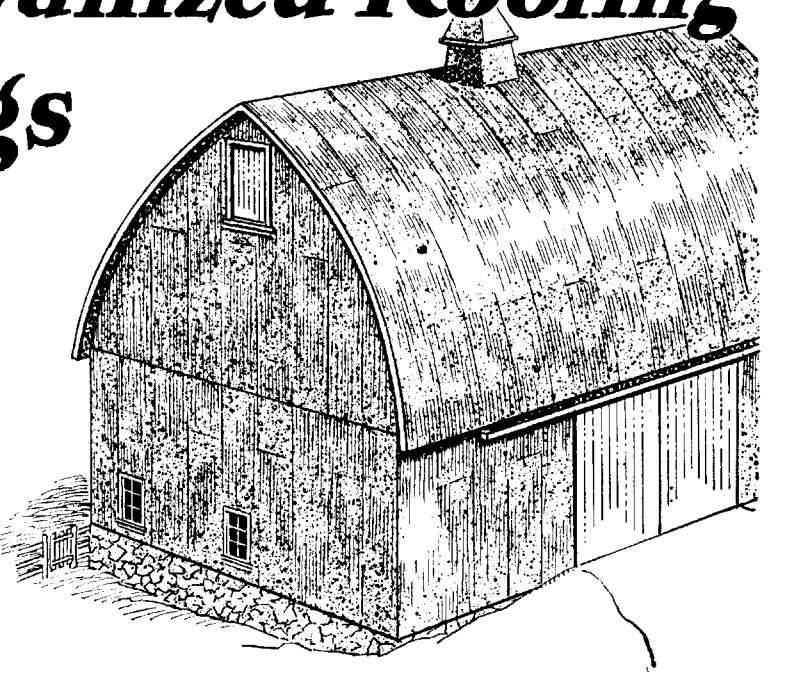
CHEMICALS — Carbide and Carbon Chemicals Corporation **ELECTRODES, CARBONS & BATTERIES** — National Carbon Company, Inc.

INDUSTRIAL GASES AND CARBIDE — The Linde Air Products Company, The Oxweld Railroad Service Company, The Prest-O-Lite Company, Inc.

PLASTICS — Bakelite Corporation



It's GOOD LUCK *to have Galvanized Roofing on Buildings*



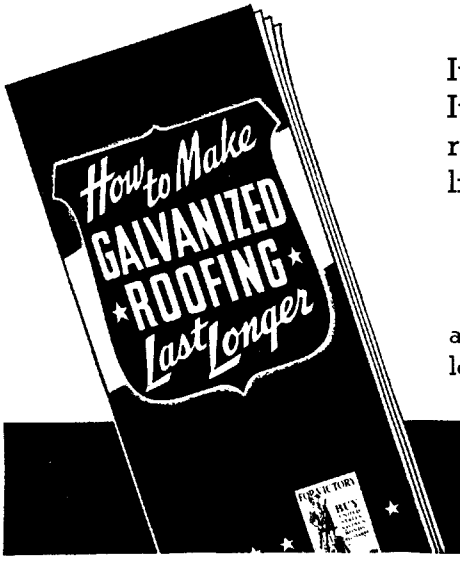
For in these days of material scarcities, galvanized roofing can be taken care of by simple, easy means and made to last a lifetime.

Galvanized roofing is zinc-coated roofing; and the U. S. Bureau of Standards states that zinc is "by far the best" protective metallic coating for iron or steel! Zinc in the form of galvanizing provides double protection:

First, by simple coverage, with a sheath of rust-resistant metal.

Second, by electro-chemical action or "sacrificial corrosion."

Galvanized roofing is used on more than a third of all the farm buildings in the United States — which proves that farmers are smart judges of roofing value!



Take Care Of It!

It's just good business to take good care of galvanized roofing. It is so easy to do it, too, that there's no excuse for neglect. With reasonable care, galvanized roofing can be made to give a lifetime of satisfactory service. Get a copy of the free booklet

"How to Make Galvanized Roofing Last Longer"

and the few simple steps to take will be made completely clear. The booklet is valuable. It's free—write for it today.

American Zinc Institute
INCORPORATED
60 East 42nd Street, New York 17, N.Y.

All Napoleon needed was *one* spotter plane...

Napoleon was a hot shot artilleryman! His cannoneers had hairy ears... but better reconnaissance would have saved his bacon . . . and his empire!

One little "Spotter Plane" might have changed the face of Europe . . . and our destiny.

Every ingredient of the spotter plane that Napoleon needed was on earth then. The only reason the plane itself didn't exist was because men had not learned to "Imagineer" the things they needed.

"Imagineering" is a word we invented to describe the way Alcoa, and other great groups of technical men and women, go about the job of supplying the materials, methods and machines of modern life.

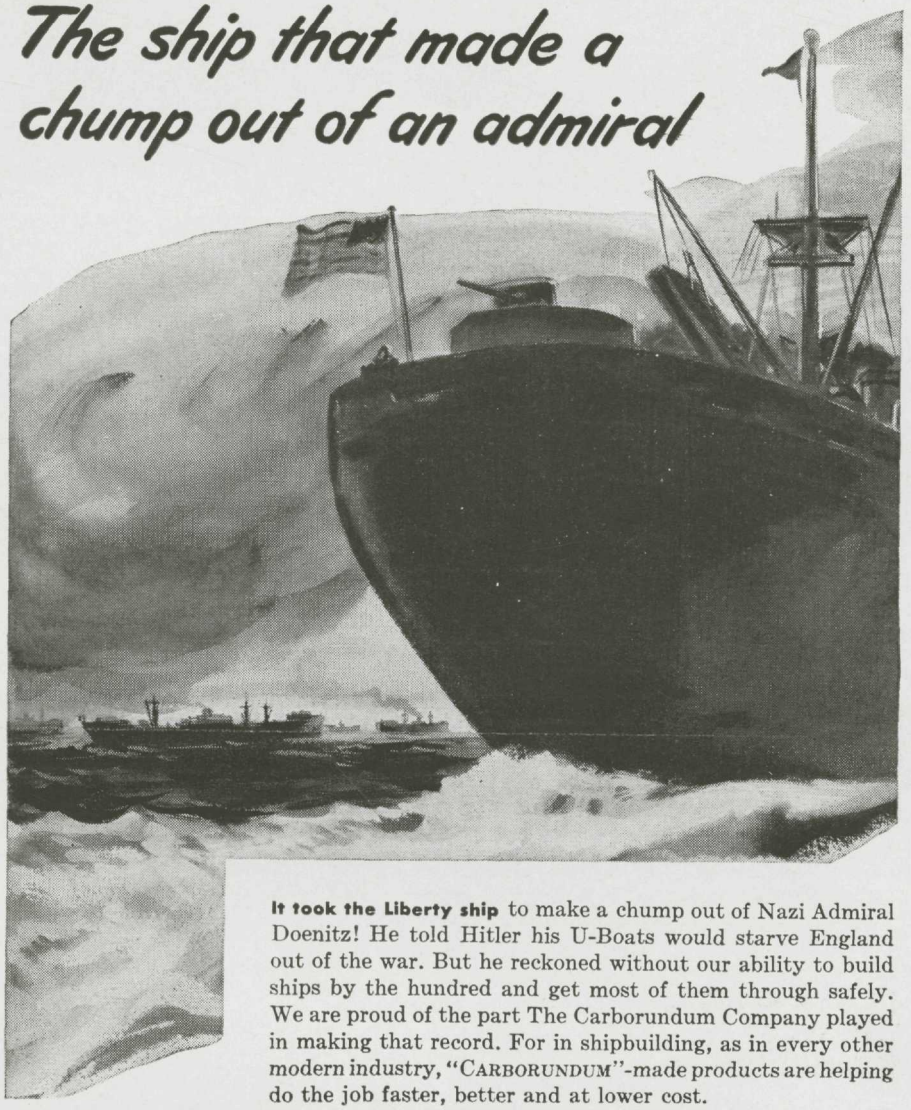
Remember this word "Imagineering". It represents the union of imagination, man's oldest mental development, and engineering, his newest. Together they are the key to progress. Together they are the engineer's contribution to mankind.

ALUMINUM COMPANY OF AMERICA
Gulf Bldg., Pittsburgh 19, Pa.

ALCOA FIRST IN ALUMINUM

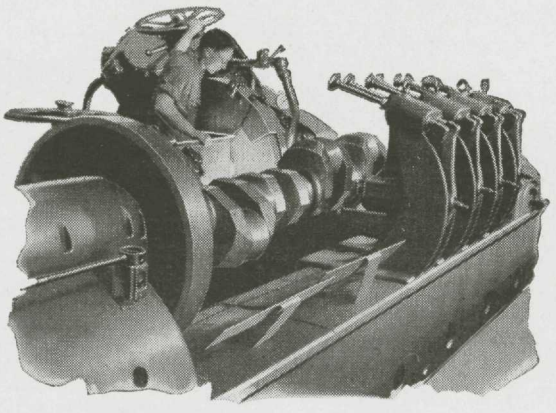
ALCOA ALUMINUM

The ship that made a chump out of an admiral



It took the Liberty ship to make a chump out of Nazi Admiral Doenitz! He told Hitler his U-Boats would starve England out of the war. But he reckoned without our ability to build ships by the hundred and get most of them through safely. We are proud of the part The Carborundum Company played in making that record. For in shipbuilding, as in every other modern industry, "CARBORUNDUM"-made products are helping do the job faster, better and at lower cost.

For instance, grinding wheels by "CARBORUNDUM" precision grind pins and bearings for giant marine crankshafts. They accurately grind and finish engine cylinders, pistons, gears, rods, parts—and miles of ship welds. Abrasives, refractories and "Globar" electric heating elements by "CARBORUNDUM" are all tools vital to production. This wide application offers exceptional opportunities for Engineer-Salesmen. If interested, please write The Carborundum Company, Niagara Falls, New York.



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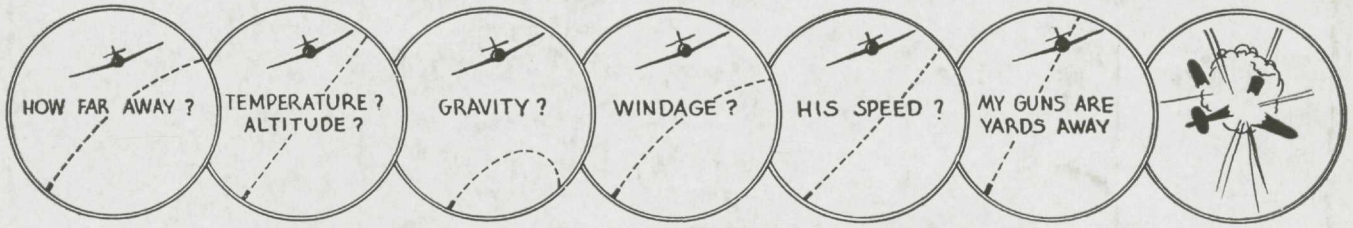
G-E Campus News

RESEARCH AND ENGINEERING KEEP GENERAL ELECTRIC YEARS AHEAD



HEAVY HEADWORK

THE Boeing B-29 Superfortress has an "electric brain." And it's pretty comforting and assuring for a gunner to toss some of the heavy headwork over to it when a Jap Zero is pumping shells at him and flying as fast as he is, or faster.

The "brain," or computer, is continuously solving an equation and making a continuous adjustment of his gun's aim. There are many elements in that equation—temperature, plane speed, windage, for example. And his bullet is fired, not at the enemy plane, but at where it's going to be a fraction of a second later. The computer supplements and corrects human judgment in the factors conditioning that aim, takes over that part of the gunner's responsibility.

The "brain" has electronic tubes—plus other electrical and mechanical elements—to help with its important thinking. The corrections are relayed to the guns continuously and automatically. And the gunner is free to concentrate on the business of keeping the Jap plane framed in his sights.

BOUNCING PUTTY

BOUNCE it like a ball—pull it like taffy. "Bouncing putty" is the most entertaining member of the silicone family. It's a by-product of the research that's kept G-E chemists busy for a number of years.

As a result of their work, silicon, an element found in sand and glass, has become the backbone of a whole new group of compounds. One of them is a rubber that stands temperatures from 575 F all the way down to 60 below. Groups of atoms—silicon and oxygen—arranged in a repetitive manner, make up its polymeric molecules.

Silicone rubber can be used for a lot of things, such as gaskets in turbosuperchargers and searchlights. It's unique, because it returns to its original height and shape even after compression under extreme heat.

MOIDER DA BUMS

DOWN in New Guinea tonight they're burning 'em over the plate . . . and heaving coke bottles at the umpire.

Antiaircraft battalions made night baseball possible, first by bulldozing a piece of jungle clear and level. Then the boys made 12 coconut trees into poles, installed them around the field, and nailed 20-foot-square white board reflectors to the tops of them. They anchored 800-million candlepower searchlights at the base of each pole, and focused their beams on the white boards.

General Electric salutes its fellow lighting engineers who found a way to bring Brooklyn to the New Guinea jungle. *General Electric Co., Schenectady 5, N. Y.*

Hear the G-E radio programs: "The G-E All-girl Orchestra" Sunday 10 p.m. EWT, NBC—"The World Today" news, Monday through Friday, 6:45 p.m. EWT, CBS—The G-E House Party, Monday through Friday, 4:00 p.m. EWT, CBS.

The best investment in the world is in this country's future. Keep all the Bonds you Buy.

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